

**Question 1** One way to measure the biologically relevant exposure to ionizing radiation is in sieverts (sV).

- An accumulated exposure to 1 sV over months increases the lifetime incidence of cancer by about 5%.
- The smallest accumulated radiation dose linked to any increased cancer risk is 0.1 sV.
- Intense short-term dose can lead to radiation poisoning, which is potentially fatal.

Based on this information, give your estimation of the number of sV associated with each of the following activities:

- (a) Normal yearly dose.
- (b) Extra dose from a cross-US airplane flight.
- (c) Extra dose from the potassium in eating one banana.
- (d) Extra dose from a CT scan of the head.
- (e) Extra dose from a mammogram.
- (f) Average annual extra dose from living within 10 miles of the Three-Mile Island nuclear plant since the 1979 accident.
- (g) Extra dose to a person in Tokyo following the Fukushima accident.
- (h) EPA dose limit for emergency workers in lifesaving operations.

- (i) Dose received by most severely exposed Fukushima plant workers.
- (j) Dose causing symptoms of radiation poisoning.
- (k) Acutely fatal radiation-poisoning dose (death within days, not from cancer)

### Question 2

- (a) Is the Mississippi river shorter or longer than 750 miles?
- (b) How long is the Mississippi river?

**Question 3** Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in antinuclear rallies. Rank the following possibilities from most likely to least likely, for instance A B C D E:

- (A) Linda is a teacher.
- (B) Linda works in a bookstore and takes yoga classes.
- (C) Linda is a bank teller.
- (D) Linda sells insurance.
- (E) Linda is a bank teller and is active in the feminist movement.

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### Question 2

- (a) Is the Mississippi river shorter or longer than 1500 miles?
- (b) How long is the Mississippi river?

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